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Patent No. 5,639,947, which is a continuation of U.S.  
Application Serial No. 07/591,823, filed October 2, 1990,  
now U.S. Patent No. 5,202,422, which is a continuation-in-  
part of U.S. Application Serial No. 07/427,765, filed October  
27, 1989, now abandoned, all of which are incorporated by  
reference in their entirety herein.

**In the Claims**

✓  
Please cancel claims 42, 44-49, 51-53, and 64-68 without prejudice or disclaimer.  
Applicants expressly reserve the right to prosecute subject matter no longer or not yet  
claimed in the instant application or in one or more applications which may claim priority  
hereto.

Please add new claims 69-80 as shown below.

① 1  
sub F3  
69. (New) The plant cell of claim 43 wherein the immunoglobulin heavy chain is  
selected from the group consisting of IgA, IgD, IgE, IgG, and IgM.

70. (New) The plant cell of claim 43, wherein said heavy chain is an IgA heavy  
chain.

71. (New) The plant cell of claim 43, wherein said heavy chain is an IgM heavy  
chain.

72. (New) The plant cell of claim 43, wherein said heavy chain is an IgG heavy  
chain.

73. (New) The plant cell of claim 43, wherein said leader sequence is non-native  
to the plant cell.

74. (New) The plant cell of claim 73, wherein said non-native leader sequence is  
an immunoglobulin leader sequence.

75. (New) The plant cell of claim 72, wherein said non-native leader sequence is  
a yeast leader sequence.

76. (New) The plant cell of claim 43, wherein said leader sequence is a plant  
leader sequence.

77. (New) The plant cell of claim 43 wherein said cell is from a tobacco plant.
78. (New) The plant of claim 21, wherein said plant is an algal plant.
79. (New) A plant comprising the plant cell of claim 43.
80. (New) A plant cell derived from the plant of claim 21.
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Please amend claims 21, 31-37, 43, 50, and 54-60 as shown below. For the examiner's convenience, all prior pending claims are shown below whether or not amended herein. A marked up version of the amended claims is attached under the heading "VERSION WITH MARKINGS TO SHOW CHANGES MADE."

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21. (Amended two times) A plant, comprising:
- (a) plant cells containing nucleotide sequences encoding one or more biologically functional multimeric proteins not normally produced by the plant, wherein each nucleotide sequence encoding a polypeptide of the multimeric protein encodes a leader sequence forming a secretion signal that is cleaved from said polypeptide following proteolytic processing; and
  - (b) biologically functional multimeric proteins encoded by said nucleotide sequences formed by assembly of said polypeptides in the cell.
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22. The plant of claim 21 wherein the multimeric protein comprises a heteromultimeric protein.


23. The plant of claim 21 wherein the multimeric protein comprises a homomultimeric protein.

24. The plant of claim 21 wherein the multimeric protein comprises a ligand binding polypeptide.

25. The plant of claim 24 wherein the ligand is an antigen.

26. The plant of claim 21 wherein the multimeric protein forms a binding site specific for a predetermined antigen.

27. The plant of claim 21 wherein the multimeric protein is an enzyme.
28. The plant of claim 21 wherein the multimeric protein is an abzyme.
29. The plant of claim 21 wherein the multimeric protein contains one or more disulfide bonds.
30. The plant of claim 21 wherein the polypeptides of the multimeric protein are joined by hydrogen bonding.
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 31. (Amended) The plant of claim 21 wherein the multimeric protein comprises an immunoglobulin.

32. (Amended) The plant of claim 31 wherein the immunoglobulin comprises a Fab.

33. (Amended) The plant of claim 31 wherein the immunoglobulin comprises a Fab'.

34. (Amended) The plant of claim 31 wherein the immunoglobulin comprises a F(ab')<sub>2</sub>.

35. (Amended) The plant of claim 31 wherein the immunoglobulin comprises a Fv.

36. (Amended) The plant of claim 31 wherein the immunoglobulin comprises an antibody.

37. (Amended) The plant of claim 31 wherein the immunoglobulin contains a paratope.

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38. The plant of claim 21 wherein the multimeric protein comprises a glycosylated immunoglobulin molecule free of sialic acid residues.

39. The plant of claim 21 wherein the plant is a dicotyledonous plant.

40. The plant of claim 21 wherein the plant is a monocotyledonous plant.

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①<sup>3</sup> 43. (Amended) A plant cell containing nucleotide sequences encoding an antigen-specific immunoglobulin, said nucleotide sequences encoding an immunoglobulin heavy and light chain polypeptide wherein each polypeptide contains a leader sequence that forms a secretion signal; and immunoglobulin encoded by said nucleotide sequences, wherein each leader sequence is cleaved from said immunoglobulin heavy chain and light chain polypeptide following proteolytic processing resulting in assembly of said antigen-specific immunoglobulin.

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①<sup>4</sup> 50. (Amended) The plant cell of claim 43 wherein the immunoglobulin is an abzyme.

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①<sup>5</sup> 54. (Amended) The plant cell of claim 43 wherein the immunoglobulin comprises a Fab.

55. (Amended) The plant cell of claim 43 wherein the immunoglobulin comprises a Fab'.

56. (Amended) The plant cell of claim 43 wherein the immunoglobulin comprises a F(ab')<sub>2</sub>.

57. (Amended) The plant cell of claim 43 wherein the immunoglobulin comprises an Fv.

58. (Amended) The plant cell of claim 43 wherein the immunoglobulin comprises an antibody.

59. (Amended) The plant cell of claim 43 wherein the immunoglobulin contains a paratope.

60. (Amended) The plant cell of claim 43 wherein the immunoglobulin is glycosylated, said glycosylation being free of sialic acid residues.

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61. The plant cell of claim 43 wherein the cell is a dicotyledonous plant cell.